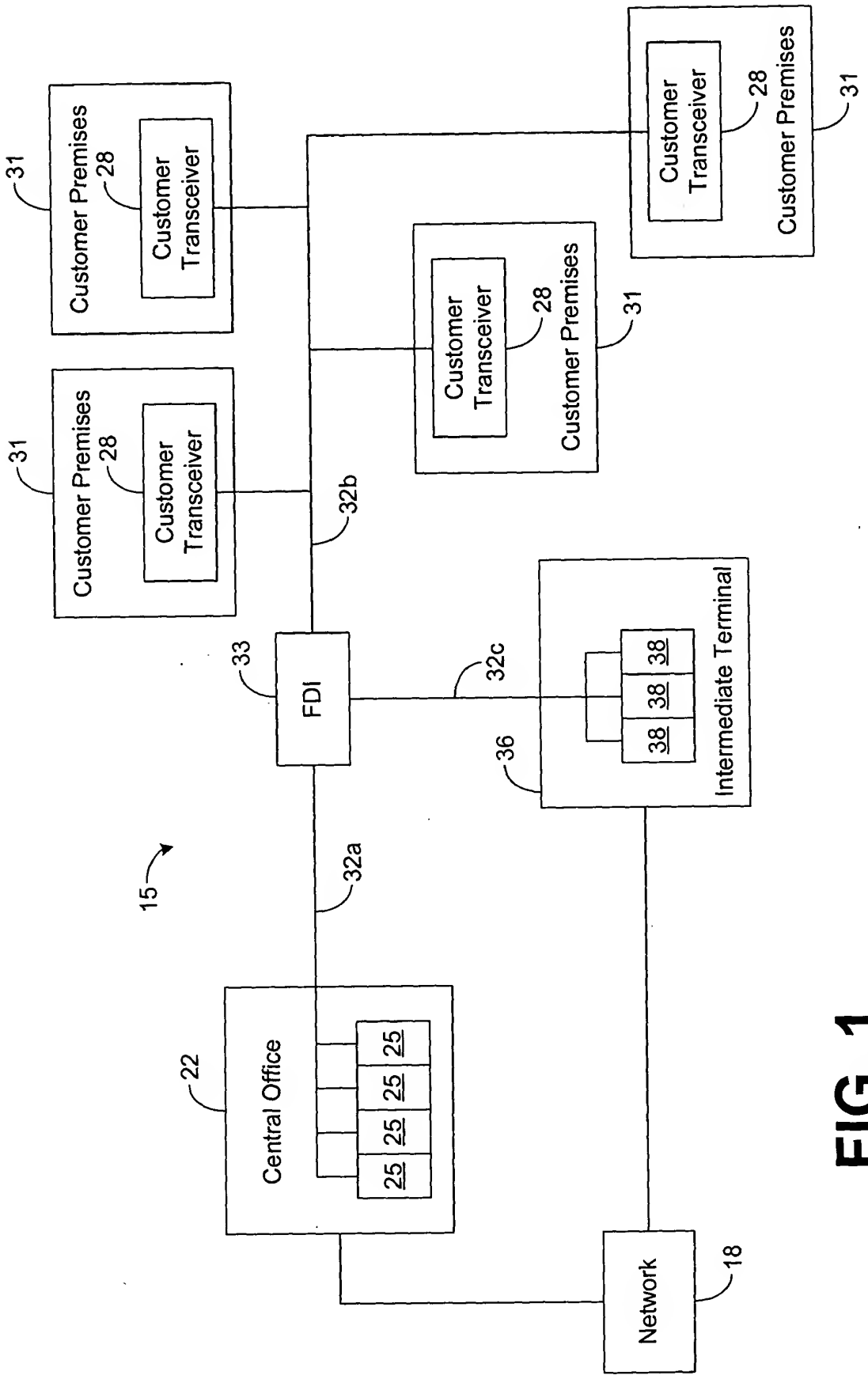


FIG. 1
(Prior Art)

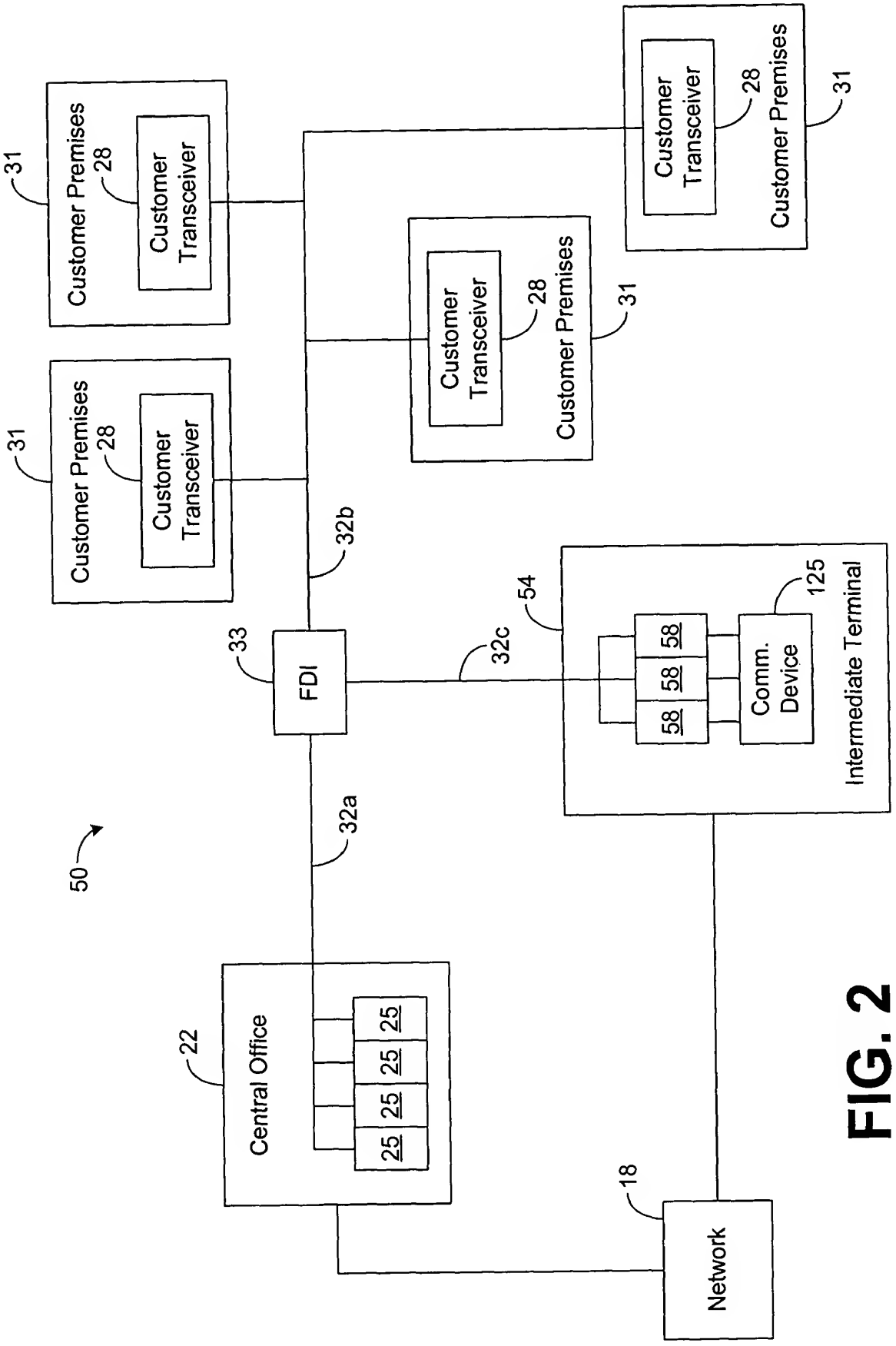

50
Central Office
22
25
25
25
25
25
25
25
25
32a
FDI
33
32b
32c
Intermediate Terminal
54
Comm. Device
125
58
58
58
58
Customer Premises
31
Customer Transceiver
28
Customer Premises
31
Customer Transceiver
28
Customer Premises
31
Customer Transceiver
28
Customer Premises
31
Customer Transceiver
28
Network
18

FIG. 2

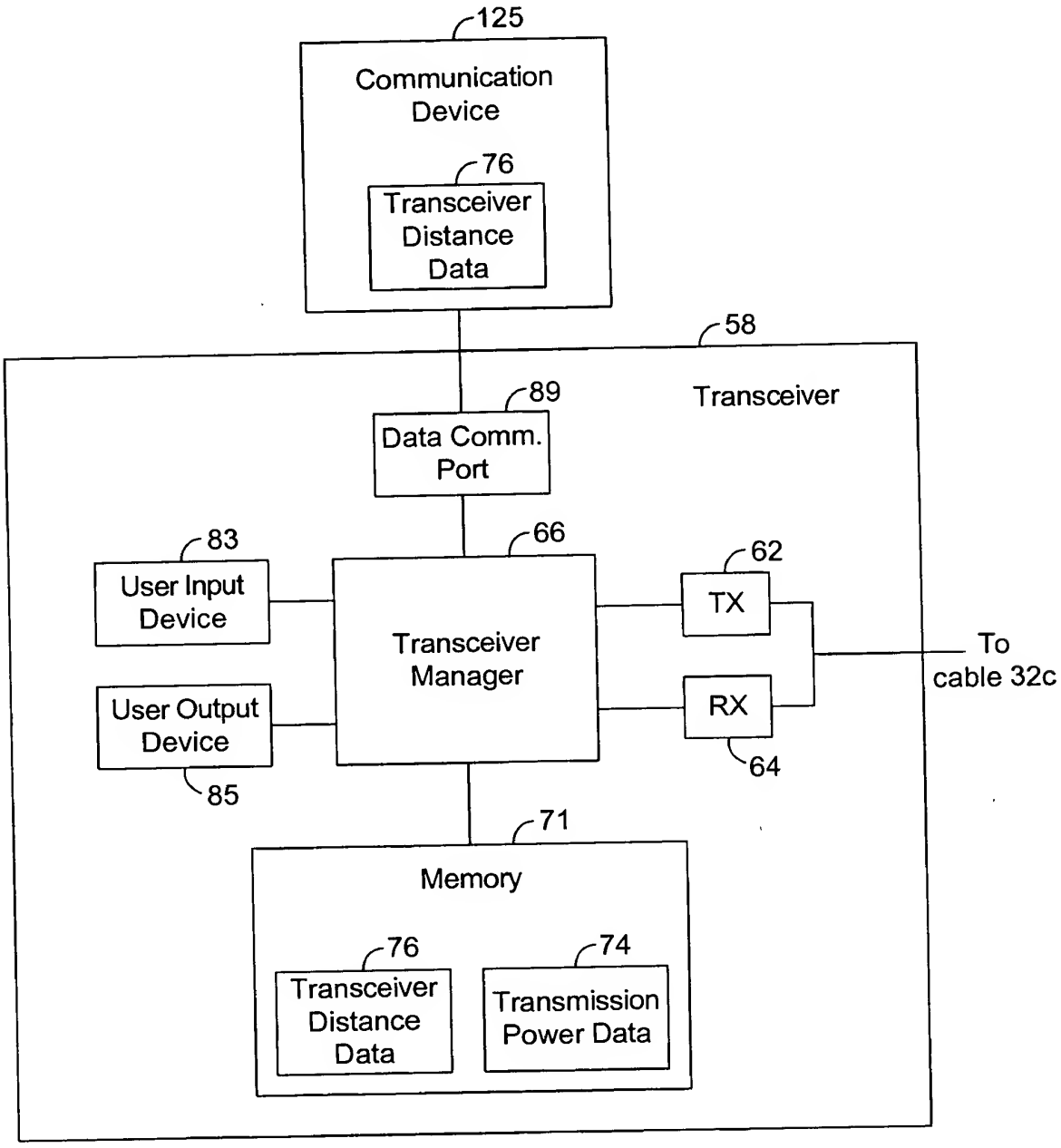

125
Communication Device
76
Transceiver Distance Data
58
Transceiver
89
Data Comm. Port
83
User Input Device
66
Transceiver Manager
62
TX
RX
64
To cable 32c
User Output Device
85
71
Memory
76
Transceiver Distance Data
74
Transmission Power Data

FIG. 3

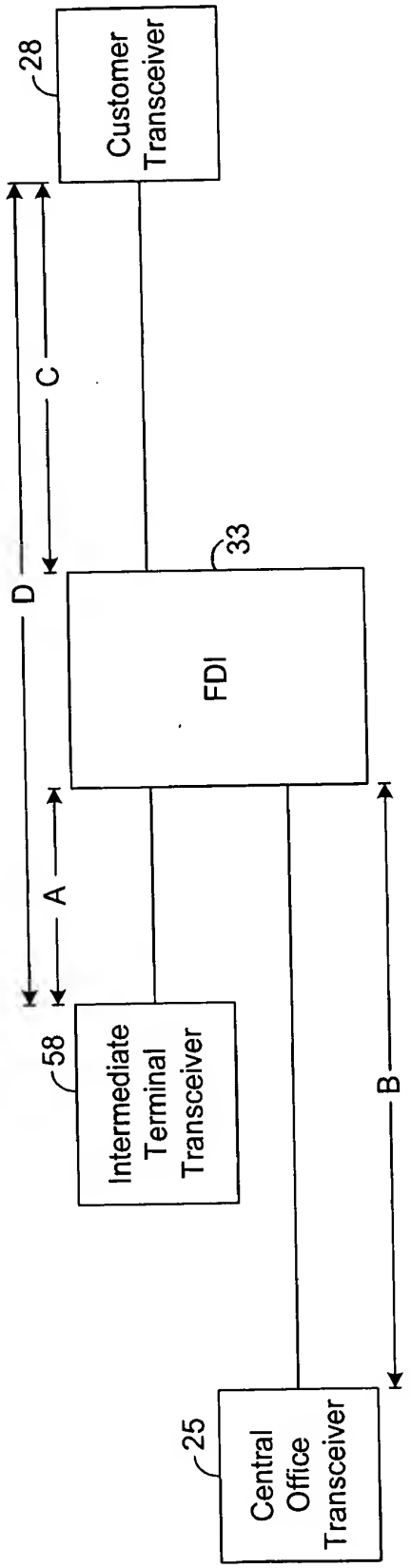
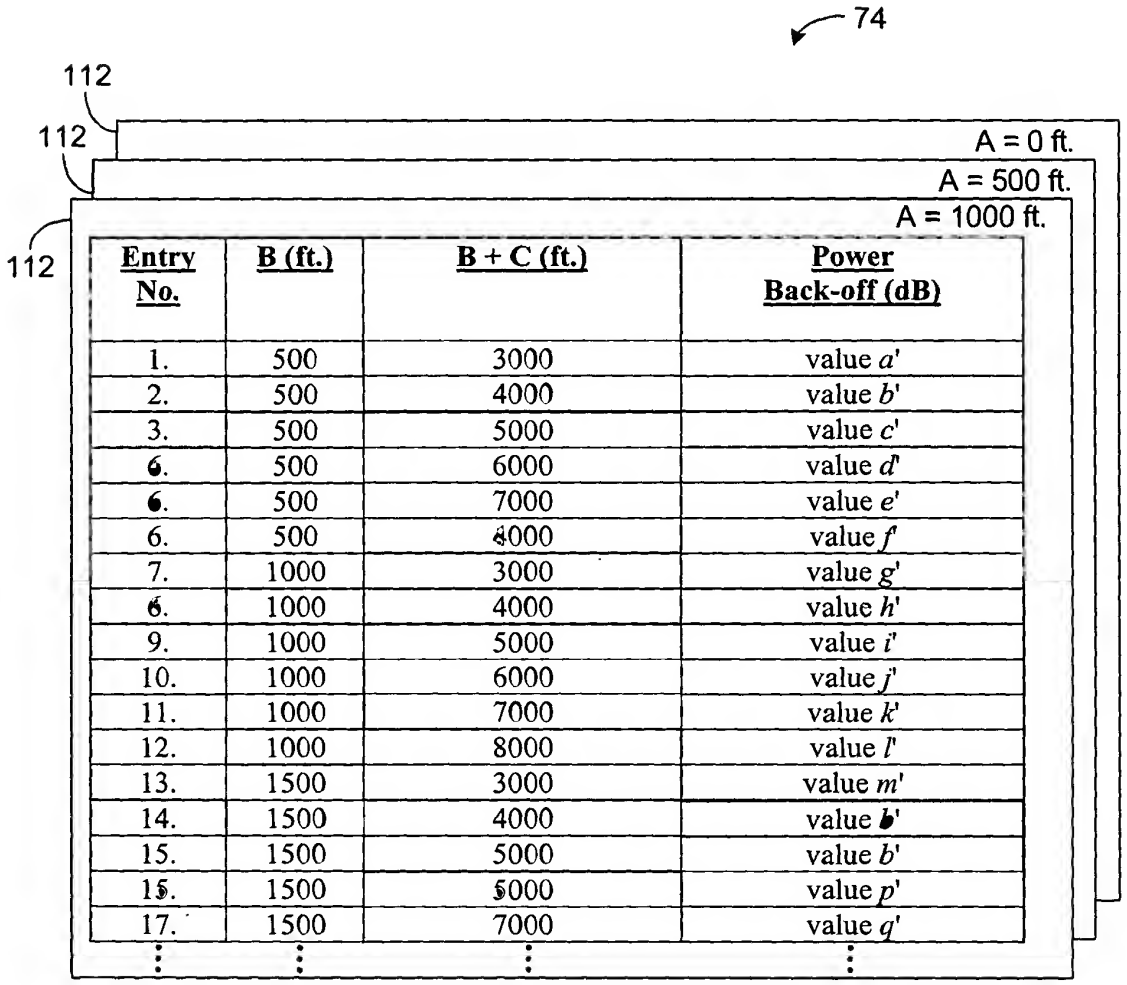
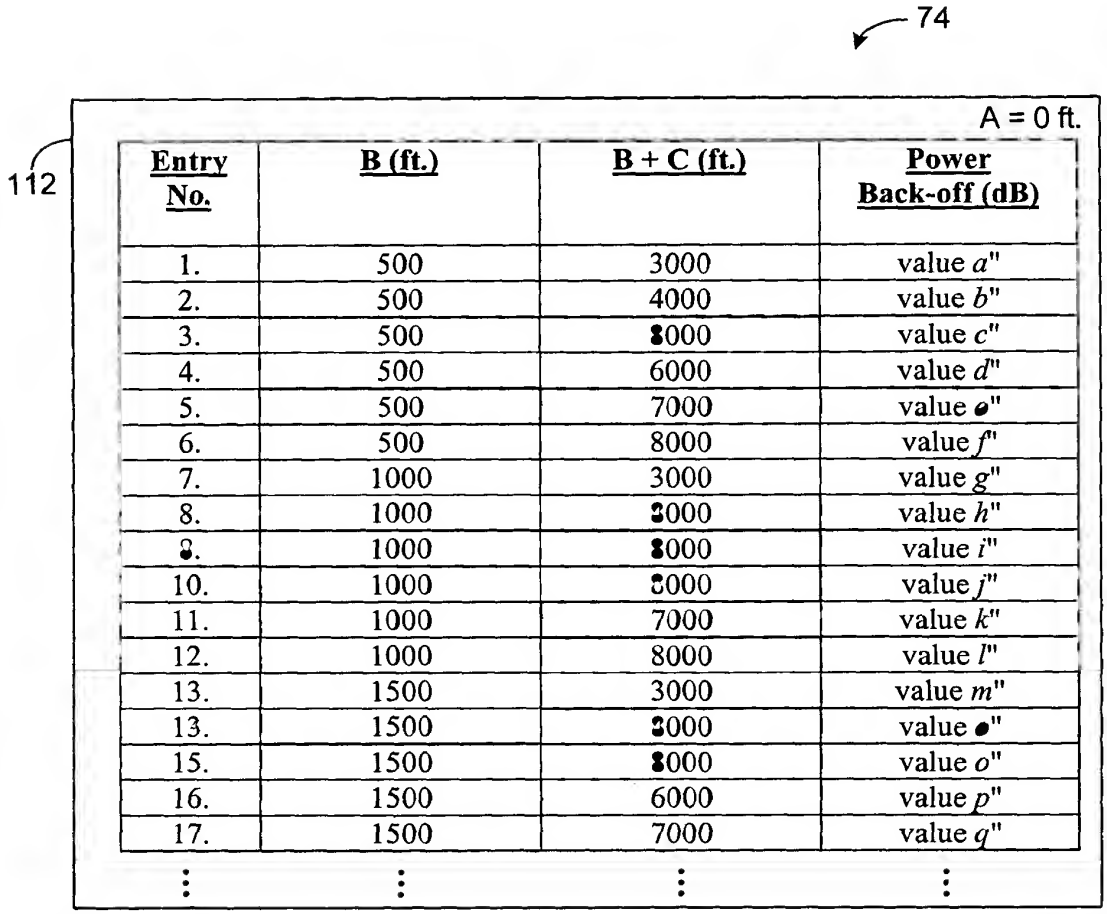

28
Customer Transceiver
C
D
33
FDI
A
B
58
Intermediate Terminal Transceiver
25
Central Office Transceiver

FIG. 4



Entry No.	B (ft.)	B + C (ft.)	Power Back-off (dB)
1.	500	3000	value *a'*
2.	500	4000	value *b'*
3.	500	5000	value *c'*
6.	500	6000	value *d'*
6.	500	7000	value *e'*
6.	500	8000	value *f'*
7.	1000	3000	value *g'*
6.	1000	4000	value *h'*
9.	1000	5000	value *i'*
10.	1000	6000	value *j'*
11.	1000	7000	value *k'*
12.	1000	8000	value *l'*
13.	1500	3000	value *m'*
14.	1500	4000	value *b'*
15.	1500	5000	value *b'*
15.	1500	5000	value *p'*
17.	1500	7000	value *q'*
⋮	⋮	⋮	⋮

FIG. 5



Entry No.	B (ft.)	B + C (ft.)	Power Back-off (dB)
1.	500	3000	value *a*"
2.	500	4000	value *b*"
3.	500	5000	value *c*"
4.	500	6000	value *d*"
5.	500	7000	value *e*"
6.	500	8000	value *f*"
7.	1000	3000	value *g*"
8.	1000	4000	value *h*"
9.	1000	5000	value *i*"
10.	1000	6000	value *j*"
11.	1000	7000	value *k*"
12.	1000	8000	value *l*"
13.	1500	3000	value *m*"
13.	1500	4000	value *n*"
15.	1500	5000	value *o*"
16.	1500	6000	value *p*"
17.	1500	7000	value *q*"
⋮	⋮	⋮	⋮

FIG. 6

132

Entry No.	B (ft.)	B + C (ft.)	Power Back-off (dB)
1.	500	1000	0
2.	500	1500	0
3.	500	2000	0
4.	500	2500	0
5.	500	3000	0
6.	500	3500	0
7.	500	4000	0
8.	500	4500	0
9.	500	5000	0
10.	500	5500	0
11.	500	6000	0
12.	500	6500	0
13.	500	7000	0
14.	500	7500	0
15.	500	8000	0
16.	500	8500	0
17.	500	9000	0
18.	500	9500	0
19.	500	10000	0
20.	500	10500	0
21.	500	11000	0
22.	500	11500	2.099
23.	500	12000	0
24.	500	12500	0.634155
25.	500	13000	0.252686
26.	500	13500	0.582275
27.	500	14000	0
28.	500	14500	0
29.	500	15000	0
30.	500	15500	0
31.	1000	1500	0
32.	1000	2000	0
33.	1000	2500	0
34.	1000	3000	0
35.	1000	3500	0
36.	1000	4000	0
37.	1000	4500	0
38.	1000	5000	0
39.	1000	5500	0
40.	1000	6000	0
41.	1000	6500	0

FIG. 7A

132

Entry No.	B (ft.)	B + C (ft.)	Power Back-off (dB)
42.	1000	7000	0
43.	1000	7500	0
44.	1000	8000	0
45.	1000	8500	0
46.	1000	9000	2.26685
47.	1000	9500	0
48.	1000	10000	0.155029
49.	1000	10500	0.338135
50.	1000	11000	1.65955
51.	1000	11500	4.61365
52.	1000	12000	1.37878
53.	1000	12500	2.99927
54.	1000	13000	2.55066
55.	1000	13500	2.85278
56.	1000	14000	0
57.	1000	14500	0.496826
58.	1000	15000	0
59.	1000	15500	0
60.	2000	2500	0
61.	2000	3000	0
62.	2000	3500	0
63.	2000	4000	0
64.	2000	4500	0
65.	2000	5000	0
66.	2000	5500	0
67.	2000	6000	0
68.	2000	6500	0
69.	2000	7000	0.423584
70.	2000	7500	1.42761
71.	2000	8000	2.63611
72.	2000	8500	4.38171
73.	2000	9000	8.21472
74.	2000	9500	3.71948
75.	2000	10000	5.24536
76.	2000	10500	5.60242
77.	2000	11000	6.82007
78.	2000	11500	9.79858
79.	2000	12000	6.18835
80.	2000	12500	7.80884
81.	2000	13000	7.43042
82.	2000	13500	7.89429

FIG. 7B

132

Entry No.	B (ft.)	B + C (ft.)	Power Back-off (dB)
83.	2000	14000	1.18347
84.	2000	14500	4.90356
85.	2000	15000	2.68494
86.	2000	15500	0
87.	3000	3500	0
88.	3000	4000	0
89.	3000	4500	0.887451
90.	3000	5000	2.1814
91.	3000	5500	3.19763
92.	3000	6000	4.04907
93.	3000	6500	4.78455
94.	3000	7000	5.84351
95.	3000	7500	7.00623
96.	3000	8000	8.35815
97.	3000	8500	10.2502
98.	3000	9000	14.2084
99.	3000	9500	9.08142
100.	3000	10000	10.3845
101.	3000	10500	10.946
102.	3000	11000	12.0569
103.	3000	11500	14.9286
104.	3000	12000	11.0345
105.	3000	12500	12.594
106.	3000	13000	12.0721
107.	3000	13500	12.475
108.	3000	14000	5.80994
109.	3000	14500	9.39575
110.	3000	15000	7.06726
111.	3000	15500	0.24353
112.	4000	4500	2.36755
113.	4000	5000	5.46814
114.	4000	5500	7.3114
115.	4000	6000	8.65112
116.	4000	6500	9.80164
117.	4000	7000	11.0315
118.	4000	7500	12.3865
119.	4000	8000	13.9398
120.	4000	8500	16.0394
121.	4000	9000	20.199
122.	4000	9500	14.4128

FIG. 7C

132

Entry No.	B (ft.)	B + C (ft.)	Power Back-off (dB)
123	4000	10000	15.8899
124.	4000	10500	16.3416
125.	4000	11000	17.3547
126.	4000	11500	20.1135
127.	4000	12000	15.9753
128.	4000	12500	17.4066
129.	4000	13000	16.3416
130.	4000	13500	17.0648
131.	4000	14000	10.5432
132.	4000	14500	14.4617
133.	4000	15000	11.9012
134.	4000	15500	4.76013
135.	5000	5500	8.67859
136.	5000	6000	12.0844
137.	5000	6500	14.306
138.	5000	7000	16.073
139.	5000	7500	17.6874
140.	5000	8000	19.3353
141.	5000	8500	21.6882
142.	5000	9000	26.1102
143.	5000	9500	19.6252
144.	5000	10000	21.3861
145.	5000	10500	21.7126
146.	5000	11000	22.6526
147.	5000	11500	25.3381
148.	5000	12000	20.9192
149.	5000	12500	22.3138
150.	5000	13000	21.6669
151.	5000	13500	21.6882
152.	5000	14000	15.2795
153.	5000	14500	19.1736
154.	5000	15000	16.7078
155.	5000	15500	8.84644
156.	6000	6500	16.1371
157.	6000	7000	19.7626
158.	6000	7500	22.2864
159.	6000	8000	24.5569
160.	6000	8500	27.0959
161.	6000	9000	31.8445
162.	6000	9500	24.6942
163.	6000	10000	26.7938

FIG. 7D

132

Entry No.	B (ft.)	B + C (ft.)	Power Back-off (dB)
164.	6000	10500	27.0502
165.	6000	11000	27.9169
166.	6000	11500	30.5261
167.	6000	12000	25.8508
168.	6000	12500	27.2089
169.	6000	13000	26.5009
170.	6000	13500	26.7786
171.	6000	14000	19.8236
172.	6000	14500	23.5712
173.	6000	15000	21.1633
174.	6000	15500	12.948
175.	7000	7500	24.267
176.	7000	8000	28.4875
177.	7000	8500	32.0428
178.	7000	9000	37.1332
179.	7000	9500	29.7083
180.	7000	10000	31.9818
181.	7000	10500	32.2626
182.	7000	11000	33.0804
183.	7000	11500	35.6775
184.	7000	12000	30.7245
185.	7000	12500	32.0673
186.	7000	13000	31.2128
187.	7000	13500	31.3226
188.	7000	14000	24.4501
189.	7000	14500	27.9382
190.	7000	15000	25.4114
191.	7000	15500	17.2968
192.	8000	8500	34.3988
193.	8000	9000	41.1859
194.	8000	9500	33.9349
195.	8000	10000	36.7151
196.	8000	10500	37.1667
197.	8000	11000	38.0487
198.	8000	11500	40.722
199.	8000	12000	35.4852
200.	8000	12500	36.7792
201.	8000	13000	36.0559
202.	8000	13500	35.8026
203.	8000	14000	29.1101
204.	8000	14500	32.3114

FIG. 7E

132

Entry No.	B (ft.)	B + C (ft.)	Power Back-off (dB)
205.	8000	15000	29.6014
206.	8000	15500	21.618
207.	9000	9500	35.5066
208.	9000	10000	40.1453
209.	9000	10500	41.3049
210.	9000	11000	42.5409
211.	9000	11500	45.3455
212.	9000	12000	40.0232
213.	9000	12500	41.366
214.	9000	13000	40.4535
215.	9000	13500	40.7922
216.	9000	14000	33.6542
217.	9000	14500	37.0355
218.	9000	15000	33.9105
219.	9000	15500	25.6952
220.	10000	10500	42.489
221.	10000	11000	45.5652
222.	10000	11500	49.0422
223.	10000	12000	44.1125
224.	10000	12500	45.6293
225.	10000	13000	44.9091
226.	10000	13500	44.967
227.	10000	14000	37.8534
228.	10000	14500	41.6223
229.	10000	15000	38.3264
230.	10000	15500	29.6381
231.	11000	11500	48.0066
232.	11000	12000	46.2518
233.	11000	12500	48.5956
234.	11000	13000	48.6536
235.	11000	13500	48.7512
236.	11000	14000	42.0129
237.	11000	14500	44.6375
238.	11000	15000	42.5653
239.	11000	15500	33.6298
240.	12000	12500	46.4838
241.	12000	13000	49.4989
242.	12000	13500	51.156
243.	12000	14000	45.2356
244.	12000	14500	48.5956
245.	12000	15000	46.5204

FIG. 7F

132

Entry No.	B (ft.)	B + C (ft.)	Power Back-off (dB)
246.	12000	15500	37.4017
247.	13000	13500	46.9934
248.	13000	14000	46.5173
249.	13000	14500	50.5579
250.	13000	15000	49.447
251.	13000	15500	40.7343
252.	14000	14500	46.2152
253.	14000	15000	48.3972
252.	14000	15500	42.7087
253.	15000	15500	40.3436

FIG. 7G

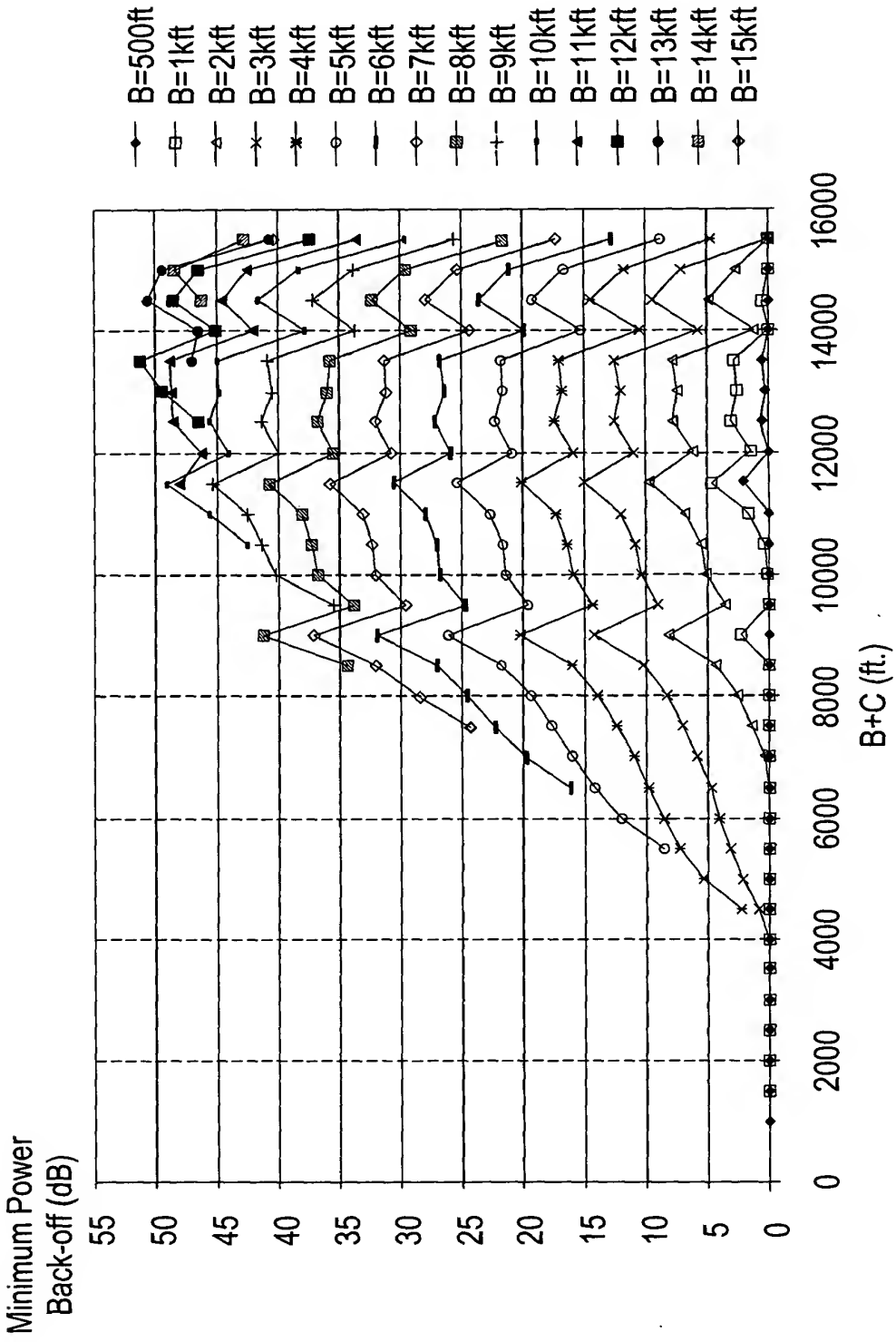

B=500ft
B=1kft
B=2kft
B=3kft
B=4kft
B=5kft
B=6kft
B=7kft
B=8kft
B=9kft
B=10kft
B=11kft
B=12kft
B=13kft
B=14kft
B=15kft
Minimum Power Back-off (dB)
55
50
45
40
35
30
25
20
15
10
5
0
0
2000
4000
6000
8000
10000
12000
14000
16000
B+C (ft.)

FIG. 8

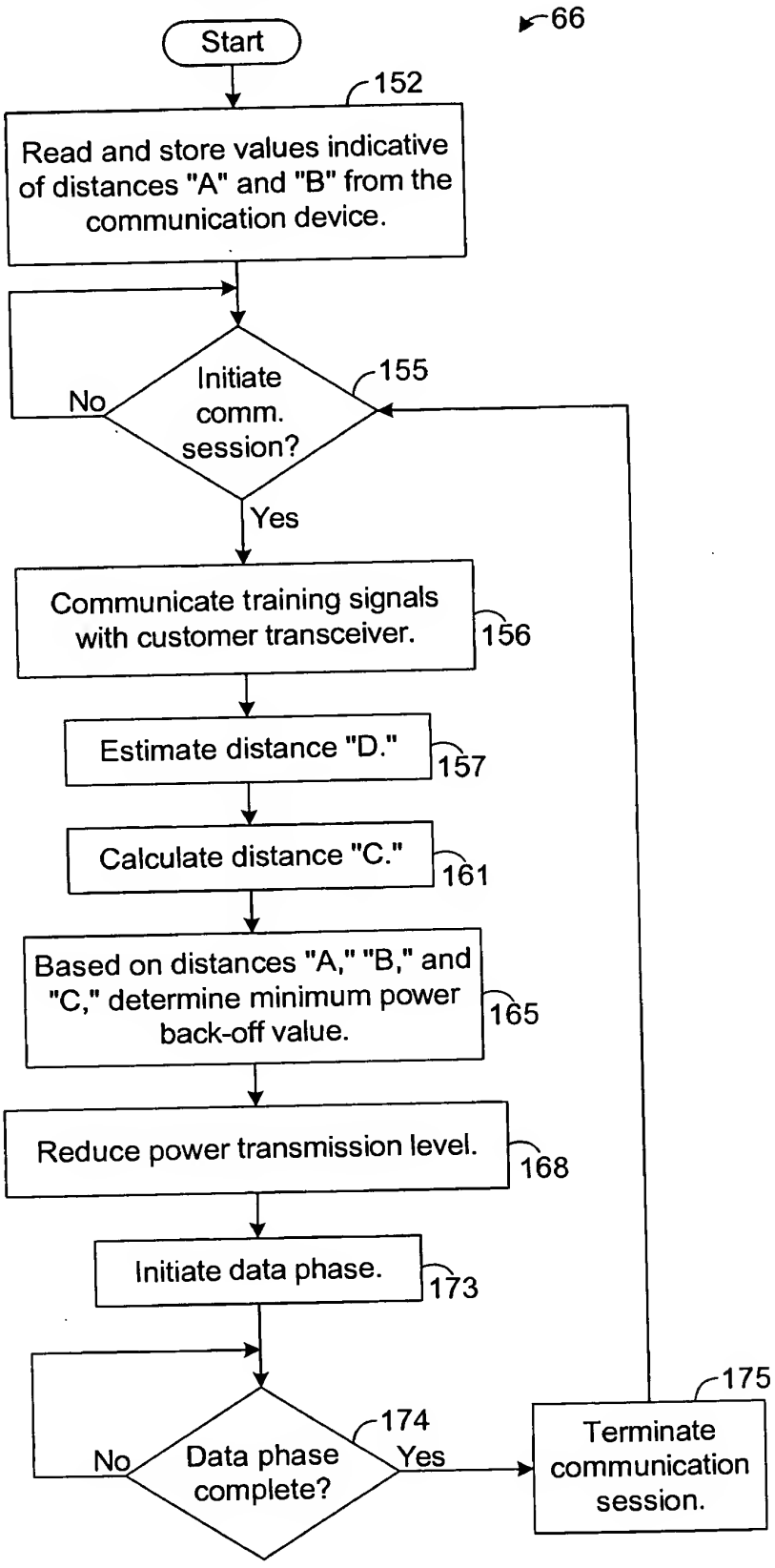

66
Start
152
Read and store values indicative of distances "A" and "B" from the communication device.
Initiate comm. session?
155
No
Yes
Communicate training signals with customer transceiver.
156
Estimate distance "D."
157
Calculate distance "C."
161
Based on distances "A," "B," and "C," determine minimum power back-off value.
165
Reduce power transmission level.
168
Initiate data phase.
173
Data phase complete?
174
No
Yes
Terminate communication session.
175

FIG. 9

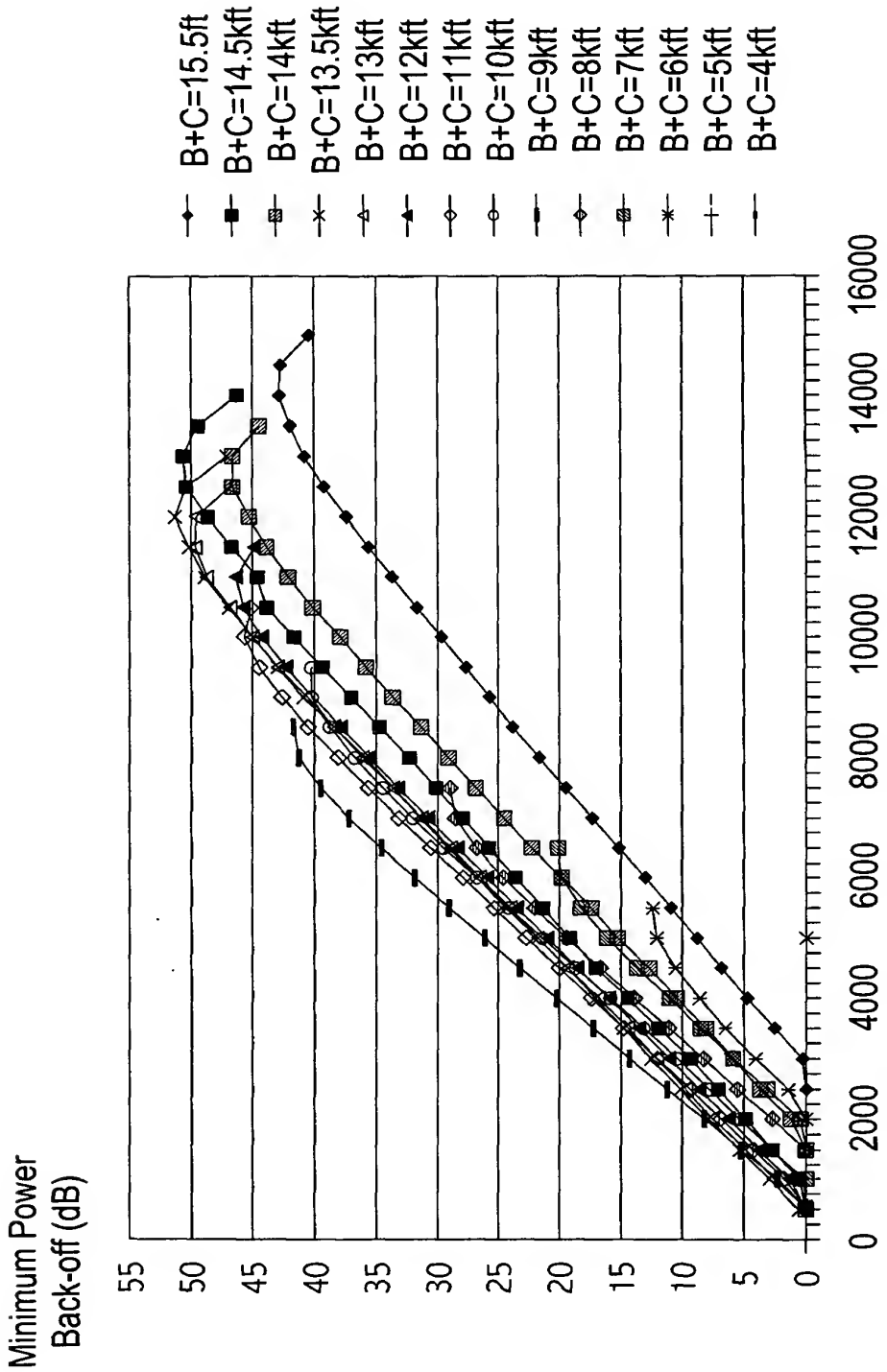

Minimum Power Back-off (dB)
55
50
45
40
35
30
25
20
15
10
5
0
0
2000
4000
6000
8000
10000
12000
14000
16000
B(ft.)
B+C=15.5ft
B+C=14.5kft
B+C=14kft
B+C=13.5kft
B+C=13kft
B+C=12kft
B+C=11kft
B+C=10kft
B+C=9kft
B+C=8kft
B+C=7kft
B+C=6kft
B+C=5kft
B+C=4kft

FIG. 10